Hovsepian v. Apple, Inc.

Doc. 158 Att. 4

EXHIBIT L

Dockets.Justia.com

PATENT
Attorney Docket No. 2473.0001-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Paul YURT et al.	
Serial No.: 08/133,982	Group Art Unit: ~~2605~~ 2414
Filed: October 8, 1993	Examiner: A. Le
For: AUDIO AND VIDEO TRANSMISSION AND RECEIVING SYSTEM	

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

AMENDMENT

This is a response to the Office Action mailed on January 13, 1994, the period for response to which has been extended through May 13, 1994, by a petition for a one-month extension of time along with the appropriate fee.

IN THE CLAIMS:

Please cancel claims 1-20, without prejudice, and add the following new claims:

--~~21~~. A transmission system for providing information to be transmitted to remote locations, the transmission system comprising:

a plurality of library means for storing items containing information;

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140 WC 05/20/94 08133982 1 115 110.00 CK

140 WC 05/20/94 08133982 1 102 370.00 CK

~~identification~~ encoding means for retrieving the information in the items from the plurality of library means and for assigning a unique identification code to the retrieved information;

conversion means, coupled to the identification encoding means, for placing the retrieved information into a predetermined format as formatted data; and

transmitter means, coupled to the conversion means, for coordinated transmission of the formatted data to one of the ~~remote locations.~~

Rule 126 34 ~~22~~. A transmission system as recited in claim 21, wherein the plurality of libraries are geographically separated.

Rule 126 351 ~~23~~. A transmission system for providing information to be transmitted to remote locations, the transmission system comprising:

a plurality of library means for storing items containing information;

identification encoding means for retrieving the information in the items from the plurality of library means and for assigning a unique identification code to the retrieved information;

conversion means, coupled to the identification encoding means, for placing the retrieved information into a predetermined format as formatted data;

ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks;

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compression means, coupled to the ordering means, for compressing the formatted and sequenced data blocks;

compressed data storing means, coupled to the data compression means, for storing as files the compressed, sequenced data blocks received from the data compression means with the unique identification code assigned by the identification encoding means; and

transmitter means, coupled to the compressed data storing means, for sending at least a portion of one of the files to one of the remote locations.

~~24.~~ 36. A transmission system as recited in claim ~~23,~~ 35, wherein the plurality of libraries are geographically separated.

~~25.~~ 37. A receiving system responsive to a user input identifying a choice of an item stored in a source material library at a transmission system, the item containing information to be sent from the transmission system to the receiving system, the receiving system comprising:

requesting means for transmitting to the source material library in the transmission system the identity of the item;

transceiver means, coupled to the requesting means, for receiving the item from the transmission system as at least one formatted data block;

receiver format conversion means, coupled to the transceiver means, for converting the at least one formatted data block into a format suitable for storage processing, and for playback at the receiver system; and

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storage means, coupled to the receiver format conversion means, for storing a complete copy of the formatted data, the storage means including an off line recording media allowing for future multiple playbacks of the data.

26. A receiver system as recited in claim 25, further comprising play back means, coupled to the receiver format conversion means, for playing back the copy of the data.

27. A receiver system as recited in claim 26, further comprising:

recognizing means for recognizing protected data; and

disabling means, coupled to the recognizing means and the storage means, for disabling the second storage means when the recognizing means recognizes protected data.

28. A receiving system responsive to a user input identifying a choice of an item stored in a source material library at a transmission system, the item containing information to be sent from the transmission system to the receiving system, the receiving system comprising:

requesting means for transmitting to the source material library in the transmission system the identity of the item;

transceiver means, coupled to the requesting means, for receiving the item from the transmission system as at least one compressed, formatted data block;

receiver format conversion means, coupled to the transceiver means, for converting the at least one compressed,

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formatted data block into a format suitable for storage processing, and for playback at the receiver system;

first storage means, coupled to the receiver format conversion means, for storing a complete copy of the formatted data;

decompressing means, coupled to the first storage means, for decompressing the copy of the formatted data; and

second storage means, including an off line recording media allowing for future multiple playbacks, for storing a complete copy of the data.

29. A receiver system as recited in claim 28, wherein the second storage means is coupled to the decompressing means, and the second storage means stores the decompressed copy of the data.

30. A receiver system as recited in claim 28, further comprising play back means, coupled to the decompressing means, for playing back the decompressed copy of the data.

31. A receiver system as recited in claim 30, further comprising:

recognizing means for recognizing protected data; and

disabling means, coupled to the recognizing means and the second storage means, for disabling the second storage means when the recognizing means recognizes protected data.

32. A system for providing information to be transmitted to remote locations, comprising:

identification encoding means for assigning a unique identification code to items of information;

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conversion means, coupled to the identification encoding means, for placing each item of information into a predetermined format as formatted data;

ordering means, coupled to the conversion means, for placing the formatted data for each item of information into a sequence of addressable data blocks;

compression means, coupled to the ordering means, for compressing the formatted and sequenced data blocks;

compressed data storing means, coupled to the data compression means, for storing as files the compressed, sequenced data blocks; and

first transmitter means, coupled to the compressed data storing means, for selectively sending at least a portion of one of the files;

a distribution system, remote from the transmission system, the distribution system comprising:

means for receiving and storing a complete copy of the portion of one of the files sent by the first transmitter means; and

second transmitter means, responsive to the stored portion of the one of the files, for transmitting a representation of the stored portion to at least one of a plurality of the remote locations.

~~23.~~ A transmission system as recited in claim ~~22,~~ wherein;

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the first transmitter means transmits the portion of the one of the files at a non-real time rate; and the second transmitter means transmits the stored portion in substantially real time.

34. A transmission system as recited in claim 33, wherein the second transmitter means comprises a decompressor for decompressing the complete copy of the stored portion of the one of the files.

35. A transmission system as in claim 32, further comprising library means for storing and supplying to the identification encoding means items containing information.

36. A digital audio/video communication network comprising: a local reception system comprising;

means for receiving compressed, digitized data representing at least one item of audio/video information at a non-real time rate,

means for storing a complete copy of the received compressed, digitized data, and

means, responsive to the stored compressed, digitized data, for transmitting a representation of the at least one item of audio/video information at a real-time rate to at least one of a plurality of subscriber receiving stations coupled to the local reception system; and

a converter for decompressing the compressed, digitized data representing the at least one audio/video program.

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Rule 126 49 ~~37~~. A digital audio/video communication network as recited in claim 36, wherein the converter is an element of the means for transmitting.

Rule 126 50 ~~38. A digital audio/video communication network as recited in claim 36, further comprising a processing station for formatting items of audio/video information as compressed, digitized data and transmitting the compressed, digitized data representing at least one item of audio/video information at the non-real time rate to the local distribution system.~~

Rule 126 51 ~~39~~. A digital audio/video communication network as recited in claim 38, wherein the central processing station comprises:

means for inputting items of audio/video information; conversion means for placing each input item of audio/video information into a predetermined format as formatted data;

compression means for compressing the formatted data; and transmitter means for sending compressed formatted data for the at least one item of audio/video information at the non-real time rate to the local reception system.

Rule 126 52 ~~40~~. A method of distributing audio/video information comprising:

transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information at a non-real time rate from a central processing location;

receiving the transmitted compressed, digitized data representing a complete copy of the at least one item of audio/

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video information, at a local distribution system remote from the central processing location;

storing the received compressed, digitized data representing the complete copy of the at least one item at the local distribution system; ~~and~~

in response to the stored compressed, digitized data, transmitting a representation of the at least one item at a real-time rate to at least one of a plurality of subscriber receiving stations coupled to the local distribution system.

Rule 126 53 ~~41. A method as recited in claim 40, further comprising the step of decompressing the compressed, digitized data representing the at least one audio/video program.~~

Rule 126 54 ~~42~~. A method as recited in claim 41, wherein the decompressing step is performed in the local distribution system to produce the representation of the at least one item for transmission to the at least one subscriber station.

Rule 126 55 ~~43~~. A method as in claim 40, wherein the transmitting step comprises:

inputting an item having information into the transmission system;

assigning a unique identification code to the item having information;

formatting the item having information as a sequence of addressable data blocks;

compressing the formatted and sequenced data blocks;

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storing, as a file, the compressed, formatted, and sequenced data blocks with the assigned unique identification code; and

sending at least a portion of the file at the non-real time rate to the local distribution system.

~~44.~~ 15. A method as recited in claim ~~43~~ 14, wherein the inputting step comprises inputting the item having information as blocks of digital data.

~~45.~~ 16. A method as recited in claim ~~43~~ 14, wherein the inputting step comprises: inputting the item having information as an analog signal; and converting the analog signal to blocks of digital data.

~~46.~~ 56. A method of distributing audio/video information comprising:

formatting items of audio/video information as compressed digitized data at a central processing location;

transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information from the central processing location;

receiving the transmitted compressed, digitized data representing a complete copy of the at least one item of audio/video information, at a local distribution system;

storing the received compressed, digitized data representing the complete copy of the at least one item at the local distribution system; and

using the stored compressed, digitized data to transmit a representation of the at least one item to at a

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plurality of subscriber receiving stations coupled to the local distribution system.

Rule 126 59 ~~47.~~ A method as recited in claim 46, wherein the formatting step comprises:

inputting an item having information into the transmission system;

assigning a unique identification code to the item having information;

formatting the item having information as a sequence of addressable data blocks;

compressing the formatted and sequenced data blocks.

Rule 126 18 ~~60~~ ~~48.~~ A method as recited in claim 17 ~~59~~ ~~47~~, wherein the inputting step comprises inputting the item having information as blocks of digital data.

Rule 126 19 ~~61~~ ~~49.~~ A method as recited in claim 17 ~~59~~ ~~47~~, wherein the inputting step comprises:

inputting the item having information as an analog signa; and converting the analog signal to blocks of digital data.

REMARKS

By this amendment, Applicants have cancelled pending claims 1-20, without prejudice, and added new claims 21-49.

Applicants respectfully submit that new claims 21-49 are in full compliance with 35 U.S.C. § 112, and are otherwise allowable.

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The examination of and the allowance of claims 21-49 are respectfully requested.

If there are any other fees due in connection with the filing of this amendment, please charge the fees to our Deposit Account No. 06-0916. If an extension of time under 37 C.F.R. 1.136 not accounted for above is required for the entry of this amendment, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER

By: ______________________
Michael R. Kelly
Registration No. 33,921

Dated: May 13, 1994

EXHIBIT M

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
[illegible]	[illegible]		[illegible]

EXAMINER
[illegible]

ART UNIT	PAPER NUMBER
	10

[illegible]
[illegible]
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DATE MAILED: [illegible]

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☑ Responsive to communication filed on 09/21/94 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire -3- month(s), -0- days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ ______

Part II SUMMARY OF ACTION

1. ☑ Claims 1-61 are pending in the application.
   Of the above, claims ______ are withdrawn from consideration.
2. ☑ Claims 1-32 have been cancelled.
3. ☑ Claims 35-38, 40-42, 44-47 are allowed.
4. ☑ Claims 33, 34, 39, 43, 48-58 are rejected.
5. ☑ Claims 59-61 are objected to.
6. ☐ Claims ______ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on ______. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on ______, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed ______, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. ______; filed on ______.
13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

21 33
31 43
41 53

Serial Number: 08/133,982

Art Unit: 2614

1. This Office Action is in response to the Amendment filed on 09/21/94 and it is made non-final.

2. Claims 21-49 have been renumbered as claims 33-61, respectively, according to Rule 126.

Specification

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention, and the specification, as originally filed, does not provide support for the invention as is now claimed.

The claimed subject matters of "a transmitter, coupled to the conversion means, for coordinated transmission" (claim 33), protected data recognizing means and disabling means (claims 39, 43), receiving data at a non-real time rate (claims 48, 52) are not disclosed in the originally filed specification.

The specification fails to provide the actual hardware structures to support the claimed "recognizing means for recognizing protected data" and "disabling means".

Claim Rejections - 35 USC § 112

4. Claims 33, 34, 39, 43, 48-57 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

5. Claims 48-51, 53, 54 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 48, line 2, the use of a ";" after the recitation "a local reception system comprising" is suggested to be modified.

Regarding claim 48, lines 13-15, the electrical couplings for the claimed "converter" and other elements of the local reception system is not clearly provided.

Regarding claim 48, line 15, the recitation "the at lèast one audio/video program" lacks antecedent basis.

Regarding claim 50, line 6, the recitation "the local distribution system" lacks antecedent basis.

Regarding claim 53, line 3, the recitation "the at least one audio/video program" lacks antecedent basis.

Regarding claim 53, it is unclear of when, during the claimed method, the "decompressing" step is carried out.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 33, 34, 48-54, 58 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ballantyne et al.

Regarding claim 33, Ballantyne et al's disclosure of a central distribution library being a central depository for movie data, comprising the process of appending unique identification code for each movie type to digital video data, and converting digital video data into light energy for transmission over communication network, see Figure 1b, column 3, line 59 to column 4, line 56, conforms to the claimed library means, identification encoding means, conversion means and transmitting means of the claim 33's transmission system.

Regarding claim 34, the limitation of the plurality of library being geographically separated is inherent from Ballantyne et al's teaching that regional distribution library is provided in each of the geographical areas.

Regarding claims 48-54 and 58, the claimed procession station, local distribution system comprising of receiving means, storing means, transmitting means are disclosed in Ballantyne et al's movie distribution method comprising the processes of compressing, digitizing data, sending digitized compressed signals to a receiver, converting to corresponding electronic signals, temporarily storing the converted signals, decompressing the signals and passing the decompressed signals to viewer, see column 6, line 57 to column 7, line 8.

Allowable Subject Matter

8. Claims 39, 43, 55-57 would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 112 and to include all of the limitations of the base claim and any intervening claims.

9. Claims 35-38, 40-42, 44-47 are allowable over the prior art of record.

10. Claims 59-61 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda Le whose telephone number is (703) 305-4769. The examiner can normally be reached on Monday-Thursday from 8:00 AM-5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached on (703)305-4714.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Amanda Le

Amanda Le

December 21, 1994

STEPHEN CHIN
SUPERVISORY PRIMARY EXAMINER
GROUP 2600

EXHIBIT N

US005133079A

United States Patent [19]

Ballantyne et al.

[11] Patent Number: 5,133,079

[45] Date of Patent: Jul. 21, 1992

[54] METHOD AND APPARATUS FOR DISTRIBUTION OF MOVIES

[76] Inventors: Douglas J. Ballantyne, 21 Horner Dr., Nepean, Ontario, K2H 5E6, Canada; Michael Mulhall, 28 Carlyle Ave., Ottawa, Ontario, K1S 4Y3, Canada

[21] Appl. No.: 573,707

[22] Filed: Aug. 28, 1990

[30] Foreign Application Priority Data

Jul. 30, 1990 [CA] Canada 2022302

[51] Int. Cl.[5] H04H 1/02; H04N 7/10

[52] U.S. Cl. 455/4.1; 358/86; 358/335; 455/5.1; 455/72

[58] Field of Search 455/3, 5, 6, 72, 4; 358/86, 102, 142, 146, 133, 335; 381/34, 35, 30, 31; 370/110.1, 109; 360/8, 13, 15; 369/30

[56] References Cited

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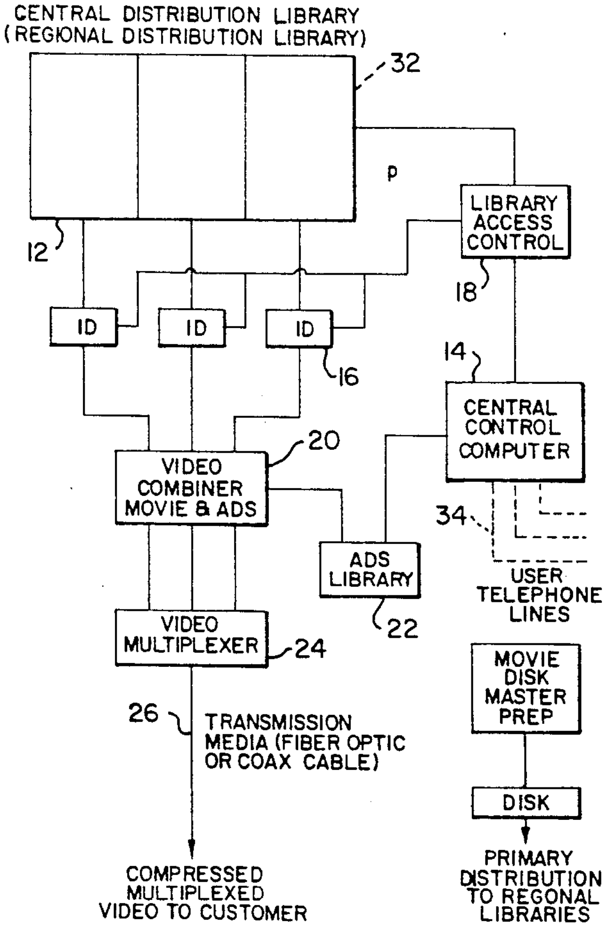
4,961,109	10/1990	Tanaka	358/84
4,963,995	10/1990	Lang	358/335
4,975,771	12/1990	Kassatly	358/146

Primary Examiner—Curtis Kuntz
Assistant Examiner—Chi H. Pham
Attorney, Agent, or Firm—Burke-Robertson

[57] ABSTRACT

A new and useful method and apparatus for distribution of movies for viewing on a customer's television set. Digitized compressed signals containing audio and visual components of the movie selected by the customer are sent to the customer's receiver. The digital signals are converted to corresponding electronic signals; which are decompressed and converted to audio and video signals. These converted signals are passed to a conventional television set for viewing by the customer.

16 Claims, 6 Drawing Sheets


CENTRAL DISTRIBUTION LIBRARY
(REGIONAL DISTRIBUTION LIBRARY)
32
P
12
LIBRARY ACCESS CONTROL
18
ID
ID
ID
16
14
CENTRAL CONTROL COMPUTER
20
VIDEO COMBINER MOVIE & ADS
34
ADS LIBRARY
USER TELEPHONE LINES
22
VIDEO MULTIPLEXER
24
MOVIE DISK MASTER PREP
26
TRANSMISSION MEDIA (FIBER OPTIC OR COAX CABLE)
DISK
COMPRESSED MULTIPLEXED VIDEO TO CUSTOMER
PRIMARY DISTRIBUTION TO REGONAL LIBRARIES

VIDEO MASTER COMPRESSION SYSTEM

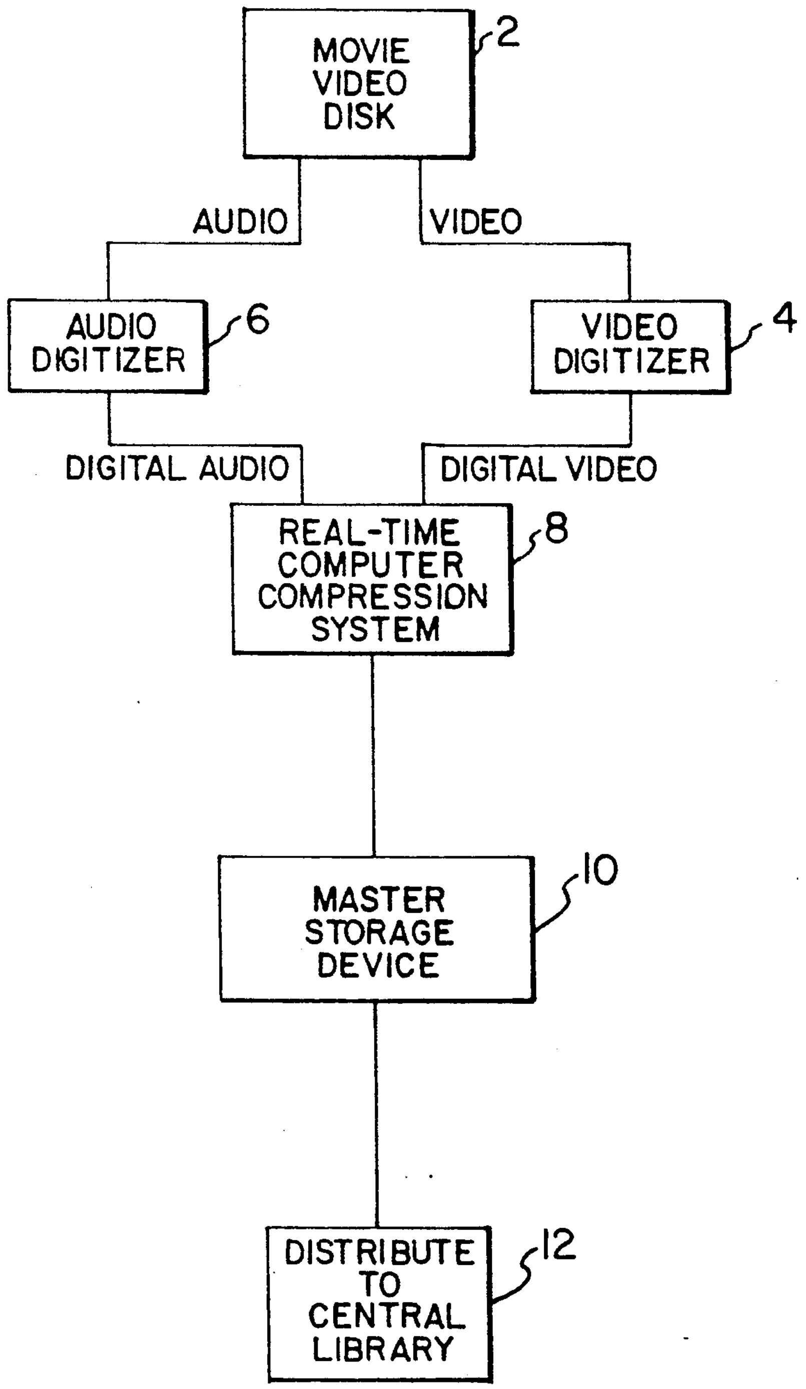
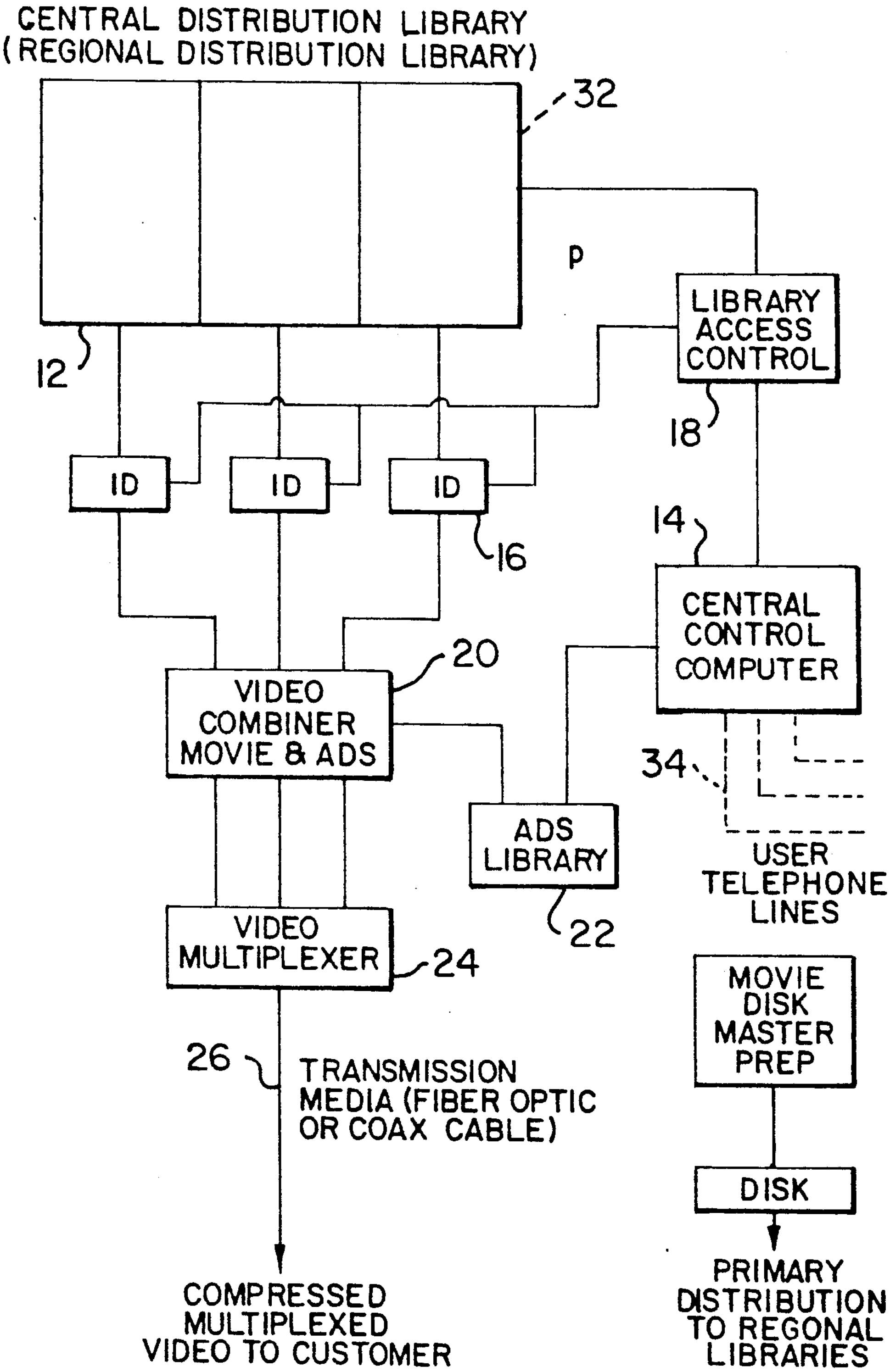

MOVIE VIDEO DISK
2
AUDIO
VIDEO
AUDIO DIGITIZER
6
VIDEO DIGITIZER
4
DIGITAL AUDIO
DIGITAL VIDEO
REAL-TIME COMPUTER COMPRESSION SYSTEM
8
MASTER STORAGE DEVICE
10
DISTRIBUTE TO CENTRAL LIBRARY
12

FIG. 1A


CENTRAL DISTRIBUTION LIBRARY
(REGIONAL DISTRIBUTION LIBRARY)
32
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LIBRARY ACCESS CONTROL
12
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ID
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CENTRAL CONTROL COMPUTER
20
VIDEO COMBINER MOVIE & ADS
34
ADS LIBRARY
USER TELEPHONE LINES
VIDEO MULTIPLEXER
24
22
MOVIE DISK MASTER PREP
26
TRANSMISSION MEDIA (FIBER OPTIC OR COAX CABLE)
DISK
COMPRESSED MULTIPLEXED VIDEO TO CUSTOMER
PRIMARY DISTRIBUTION TO REGONAL LIBRARIES

FIG. 1B

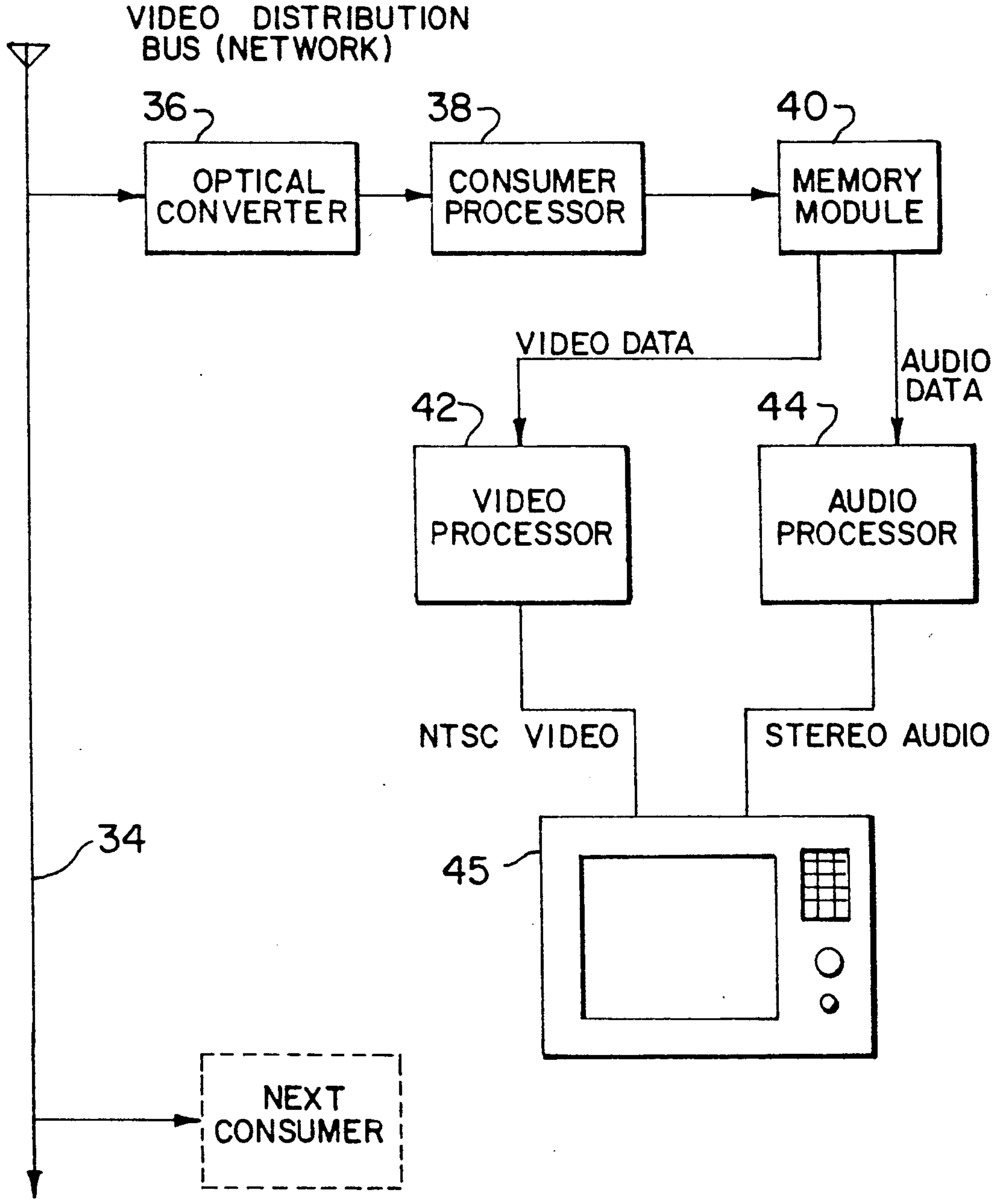
VIDEO DISTRIBUTION BUS (NETWORK)
36
OPTICAL CONVERTER
38
CONSUMER PROCESSOR
40
MEMORY MODULE
VIDEO DATA
AUDIO DATA
42
VIDEO PROCESSOR
44
AUDIO PROCESSOR
NTSC VIDEO
STEREO AUDIO
34
45
NEXT CONSUMER

FIG. 2

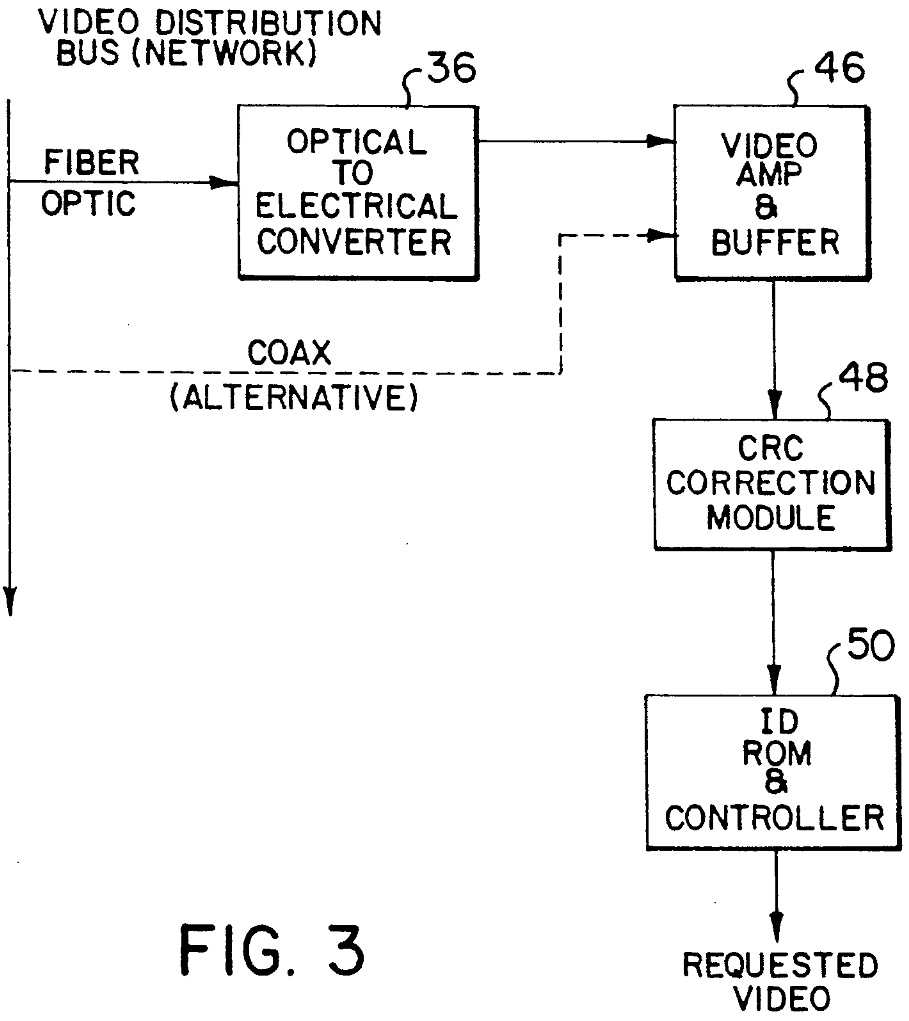
VIDEO DISTRIBUTION
BUS (NETWORK)
36
FIBER
OPTIC
OPTICAL
TO
ELECTRICAL
CONVERTER
46
VIDEO
AMP
&
BUFFER
COAX
(ALTERNATIVE)
48
CRC
CORRECTION
MODULE
50
ID
ROM
&
CONTROLLER
REQUESTED
VIDEO

FIG. 3

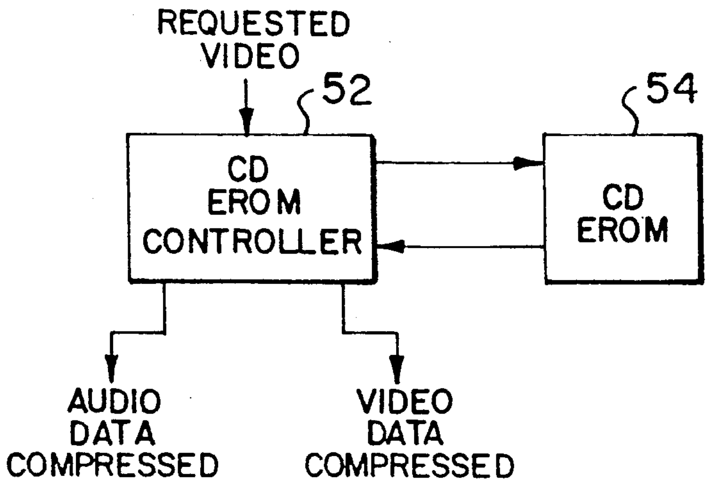
REQUESTED
VIDEO
52
CD
EROM
CONTROLLER
54
CD
EROM
AUDIO
DATA
COMPRESSED
VIDEO
DATA
COMPRESSED

FIG. 4

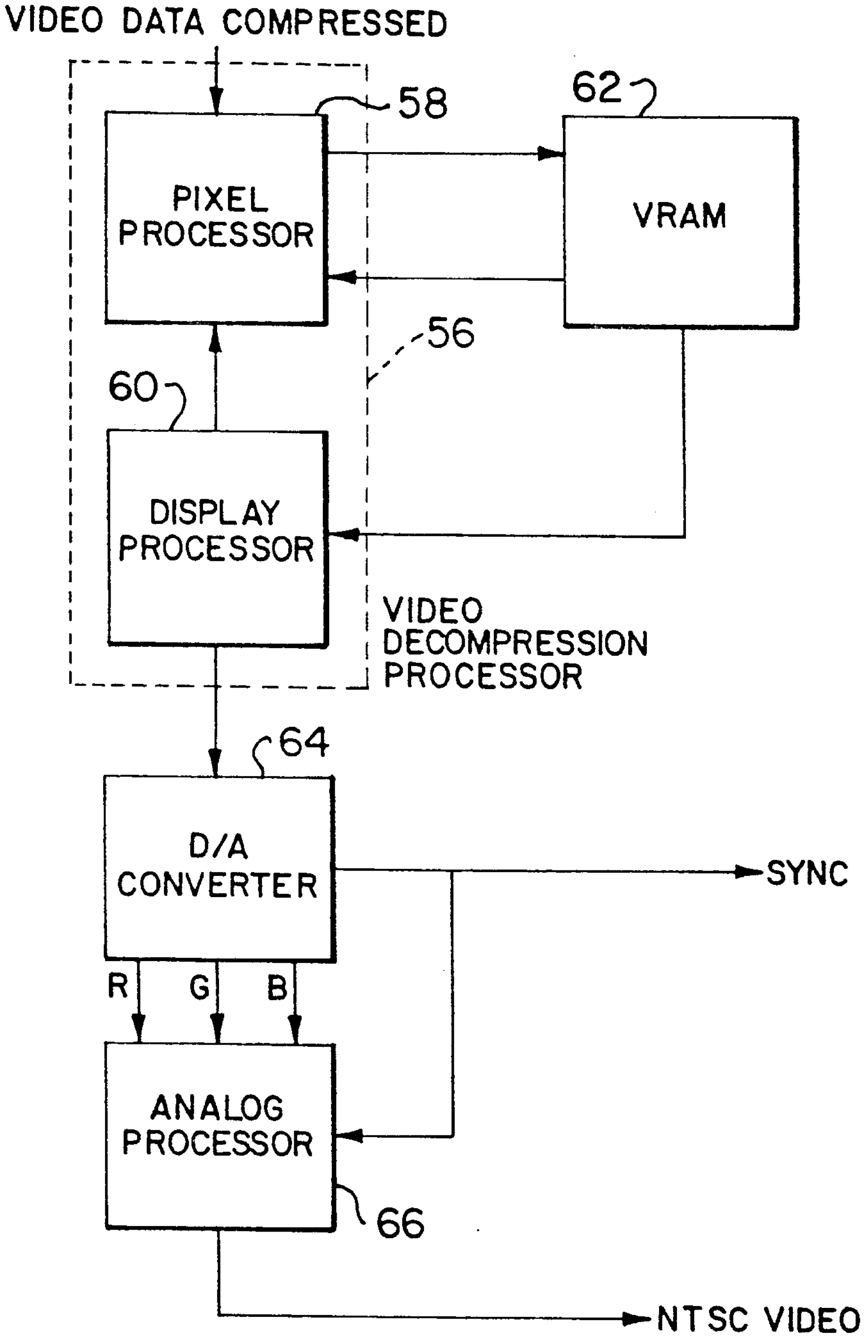
VIDEO DATA COMPRESSED
58
PIXEL PROCESSOR
62
VRAM
56
60
DISPLAY PROCESSOR
VIDEO DECOMPRESSION PROCESSOR
64
D/A CONVERTER
SYNC
R
G
B
ANALOG PROCESSOR
66
NTSC VIDEO

FIG. 5

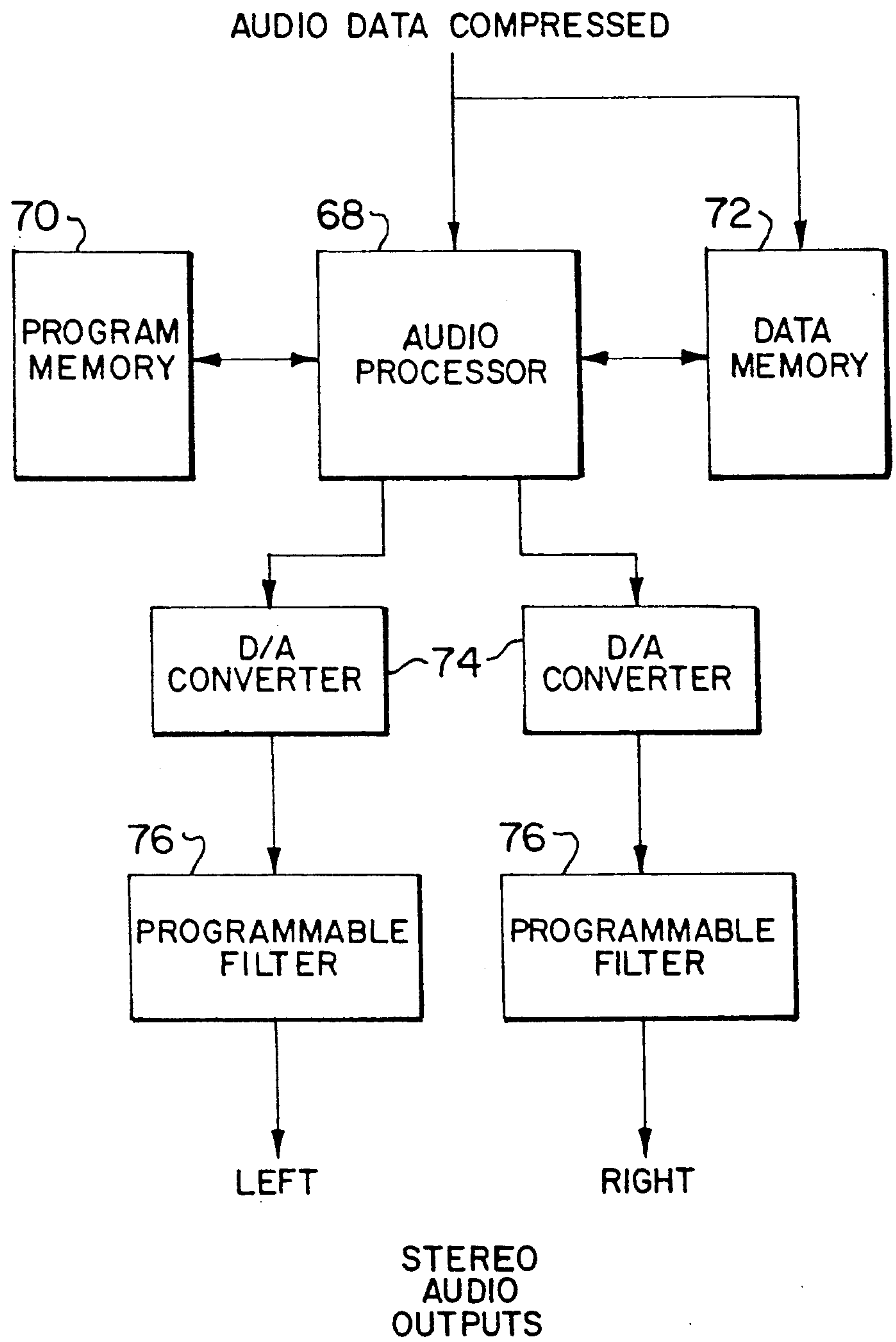
AUDIO DATA COMPRESSED
70
68
72
PROGRAM MEMORY
AUDIO PROCESSOR
DATA MEMORY
D/A CONVERTER
74
D/A CONVERTER
76
76
PROGRAMMABLE FILTER
PROGRAMMABLE FILTER
LEFT
RIGHT
STEREO AUDIO OUTPUTS

FIG. 6

METHOD AND APPARATUS FOR DISTRIBUTION OF MOVIES

BACKGROUND OF THE INVENTION

The present invention relates to a method and apparatus for distribution of movies to a customer's home, and more particularly to an electronic system whereby movies may be selected from a central library, from a customer's home and supplied electronically to that home for subsequent viewing at a time determined by the customer, on that customer's television set.

At the present time, commercial movies selected by a customer for home viewing are conventionally provided on cassette tapes in electromagnetic form. These tapes are often rented for a short period of time by the customer at a video cassette shop, taken to the customer's home and played there on a video cassette player electronically connected to the customer's television. This method of delivery of movies to a customer's home requires the customer to have a video cassette player and requires the customer actually to go to a video cassette rental shop to select the movie to be played.

It is an object of the present invention to provide a system which will avoid the need for a customer to leave home to select a movie, and as well avoid the need for a video cassette player at the customer's home to enable the viewing of a selected movie. It is a further object of the present invention to provide a novel method and apparatus to electronically distribute movies selected by a customer to the customer's home from a central location.

SUMMARY OF THE INVENTION

In accordance with the present invention there is provided a method for distribution of movies for viewing on a customer's television set. The method comprises the steps of sending digitized compressed optical signals containing audio visual data corresponding to the movie selected by the customer from a source to the customer's receiver over a fibre optic network, passing the optical signal to an optical converter to convert the optical signal to corresponding electronic signals, passing the electronic signals to processors where they are decompressed and converted to audio and visual signals compatible with conventional television sets, and passing these converted signals to a conventional television set for viewing by the customer.

A preferred embodiment of the method according to the present invention additionally includes the step wherein the signals from the optical converter are stored in memory means for retrieval and passage to the signal processors for decompression and a single viewing on the television set at a time selected by the customer.

As well, in accordance with the present invention there is provided an apparatus for enabling a customer to electronically receive and play on a television set a pre-determined movie. The apparatus comprises a receiver to receive from a source, data in digitized compressed optical signal format containing audio visual data corresponding to the movie. An optical converter is electronically associated with the receiver to convert the optical signal data to corresponding electronic signals. A video processor is electronically associated with the optical converter to receive the video electronic signals, decompress them and convert them to electronic video signals compatible with the television set to provide a video image of the movie on the television set. An audio processor is electronically associated with the optical converter to receive the audio electronic signals from the optical converter, decompress them and convert them to electronic audio signals compatible with the television set to provide an audible sound track of the movie through the television set with the video processor and audio processor electronically associated with the television set.

The present invention provides a novel method and apparatus to electronically distribute movies for viewing to a customer's home from a central or regional library. This may be achieved for example through existing coax cable or fibre optic networks. If coax cable is used, electrical to optical conversion, as described in the previous paragraphs, is not required. A customer may, from his or her own home, electronically access the central library, select a movie to be viewed and have the movie electronically sent to the customer's receiver in compressed form where it is then decompressed and played on the customer's television set or stored for subsequent viewing.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and advantages of the invention will become apparent upon reading the following detailed description and upon referring to the drawings in which:

FIGS. **1**A and **1**B constitute a flow chart illustrating the manner in which movies are prepared for storage and stored in a distributor's library, and accessed there by a customer, in accordance with the present invention;

FIG. **2** is a schematic diagram of the method of and apparatus for retaining movies at a customer's location for viewing on the customer's television set, in accordance with the present invention;

FIG. **3** is a schematic diagram of apparatus to be used by a customer in receiving and converting electronic signals from a distributor's library, for subsequent viewing on a television set;

FIG. **4** is a schematic diagram of apparatus for use in storage of signals through the apparatus of FIG. **3**;

FIG. **5** is a schematic diagram of apparatus to be used to convert the compressed video signals received by a customer into signals to provide for the video display on the customer's television set; and

FIG. **6** is a schematic diagram of apparatus to be used to convert audio signals received by a customer into signals to produce the movie's audio tract on the customer's television set.

While the invention will be described in conjunction with an example embodiment, it will be understood that it is not intended to limit the invention to such an embodiment. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to a commercial movie distribution system consisting of a central distribution centre comprised of a video master compression system and a digital movie data bank library, illustrated in more detail in FIGS. **1**A and **1**B. Located at the customer's site is a compatible digital video storage system (FIGS.

2 - 6) facilitating movie playback in real-time on the user's television unit.

1. Video Compression Mastering Process

Turning to FIGS. **1A** and **1B**, a complete motion picture movie is received on laser disks (**2**) either in conventional video analog or digital format. Typically, video output is in real-time at 30 frames per second portraying full motion effects with synchronized stereo audio. The video and audio signals are digitized with separate video and audio analog to digital converters (**4** and **6** respectively) and input to the computer compression system (**8**).

The computer compression system (**8**) consists of a typical P.C./A.T. computer with a CD-ROM drive and special purpose software. The system captures and compresses motion video in real-time and stores the compressed video on the CD-ROM at a reduced frame rate. A typical data compression factor of **150:1** will give the following level of data reduction:

Conventional video frame in digital form
 512 × 480 pixels = approximately 750 kbytes
Compressed video frame at **150:1** compression
 5 kbytes/frame
Compressed video storage requirements for a typical 2 hour movie
 5 kbytes/frame
 30 frames/sec.
 150 kbytes/sec.
 9000 kbytes/min.
 1.08 Gbytes/2 hrs.

The master storage device (**10**) must have the capacity to store the required amount of compressed data for the entire duration of the movie, as received from computer compression system (**8**). Various technologies can be utilized for this storage device. The following lists several such technologies as well as their present capacities.

CD-ROM	Mode 1	660 Mbytes
	Mode 2	750 Mbytes
WORM		200 Mbytes
Hard Disks		100 Mbytes
		*
		*
		*
		1 Gbyte
Solid State Memory		2 Mbytes

These technologies can be grouped individually to ensure sufficient storage capacity or a combination of different technologies can be utilized. However, the actual technological combination must be portable enough to allow distribution to the Central Distribution Library (**12**).

2. Central Distribution Library

Illustrated in FIG. **1B**, the Central Distribution Library (CDL) (**12**) is the central depository for the compressed movie data from the video master compression system. It is arranged such that each movie type has a unique identification code that is appended to the digital video data when it is initially entered into the library. The data is retrieved in digital format and at a very high rate such that the data from a 2 hour movie can be transmitted in a very short time duration. Because the data is compressed, it actually appears as if it is scrambled, thus allowing a secure transmission of proprietary movie information.

Central control computer (**14**) is responsible for the access control of the library and all interaction with the user. Initial user requests are taken either through CDL operator intervention or totally automatic by means of the digital telephone system. In either case, the movie is requested by using its unique identification number (ID) (**16**). After verification of the customer's credit and/or membership card number, confirmation is given to the user as to the movie to be transmitted and the actual time of transmission. User requests are queued as the demand increases. Confirmation of the transaction (i.e. movie title, time of transmittal, etcetera) may be provided on the screen of the user's television set. The central control computer (**14**) also automatically collects statistics (busy time periods, most frequently requested movie, etc.) and performs all accounting requirements.

The library access control (**18**) contains a record of where the relevant movies are located within the library and requests data transmission when a specific movie is requested. It is also responsible for appending the user identification number (UIN) to the requested movie to ensure the correct distribution of the movie is completed.

The video combiner (**20**) makes it possible to mix specific advertisements, previews of additional movies, etc. to each movie being transmitted. It also generates an error check code to enable the re-generation of lost data due to poor transmission interconnections.

As an option, an advertisement library (**22**) may be provided which contains a repository of digital video ads that have been authored by the master video compression system. These ads can be custom created and can be specifically transmitted on a daily basis, only during busy periods, only with respect to specific movies (environmentally conscious advertisements), etc.

The compressed digital video is then converted into light energy to facilitate the transmission over a fibre optic communication network. If standard coax cable is used, this optical conversion is not required. The data may also be multiplexed at multiplexer (**24**) with respect to light wavelength enabling the transmission of several movies at the same time. (This is not feasible if coax cable is the transmission media.)

The compressed multiplexed movie data is then broadcast over a wide area fibre optic network (**26**) for user distribution.

As illustrated in FIG. **1B**, a regional distribution library (**32**) of similar make-up to Central Distribution Library (**12**), but accessible through customer or user telephone lines (**34**) as illustrated, is preferably provided in each of the geographical areas to be provided with a commercial movie distribution system in accordance with the present invention.

Turning to FIG. **2**, there is illustrated in schematic form the digital video storage and movie playback system at the customer's location, where transferred movie data from the central or regional distribution library is transferred to be played back at a desired time. This system comprises an optical converter, if a fibre optic network is used (**36**), consumer processor (**38**), memory module (**40**), video processor (**42**), audio processor (**44**) and the customer's television set (**45**). The transmission system connecting the central or regional distribution library to the customer's facility is preferably a fibre optic communication network which will serve additionally as the user's telephone lines (**34**). The digital movie data is transmitted at a very high rate allowing a typical two hour movie to be transmitted in several minutes. Digital data bit error correction is performed, as will be described in more detail hereinafter, at the customer's facility to restore the integrity of the data after transmission.

As can be seen in more detail in FIG. **3**, a signal from transmission line (**34**) passes to optical converter (**36**) which is preferably an optical-to-electrical converter photo diode module (available, for example, from Optical Data Systems). There the optical data is converted to electrical data. The consumer processor (**38**) comprises a video amplifier and buffer (available, for example, from National Semi-Conductor) intended to enhance the video signal level and act as a temporary video frame buffer memory capable of storing at least two frames of video data (approximately 10 Kbytes). The Cyclic Redundancy Code (CRC) correction module (**48**) (available from Texas Instruments) receives the signal from the video amplifier and buffer (**46**) and detects and corrects the digital video data on a frame-by-frame basis. Identification read only memory (ID-ROM) (**50**) (also available from Texas Instruments) contains the customer identification number (UIN). This UIN value is checked against the UIN number tagged to the distributed video movie, and if a match occurs, the signal is passed for further processing to the compact disc erasable read only memory (CD-EROM) controller (**52**) (FIG. **4**). This controller (available from Sony Corp.) stores and retrieves the video digital data from the physical compact disk. Once the entire video data has been read from the disk it is erased, preventing further replay. There is no limitation as to the length of the time of storage, but the data can only be replayed once. The video data is still in compressed form rendering it unusable if copied, at this stage. Controller (**52**) outputs audio and video data as illustrated. Associated with controller (**52**) is a physical compact disk erasable read only memory (CD-EROM) (**54**) (available from Sony Corp.) which at the present state of technology development has the capacity of storing 600 Mbytes of digital data.

Video data form controller (**52**) is passed, when desired by a customer, to video decompression processor (**56**) which comprises two microprocessors, a pixel processor (**58**) and an output display processor (**60**) (both available from Intel Semiconductor), configured as illustrated in FIG. **5**. These are responsible for converting the compressed video data to conventional video signals. The special decompression algorithms are inherent in these microprocessors.

Video random access memory (VRAM) (**62**) (available, for example from Toshiba) is a type of digital memory that has two ports, one with random access for storing data at any memory location and the other, a serial port to output data at a high rate compatible with television scanning techniques. Activity at either port is independent of the other. VRAM (**62**) is electronically associated with pixel processor (**58**) and display processor (**60**) as illustrated.

The digital-to-analog (D/A) converter (**64**) receives the signal from video decompression processor (**56**) as illustrated, and converts the digital video data into analog data that can be used by, for example, colour RGB monitors. Analog processor (**66**) converts the RGB output from D/A converter (**64**) into contemporary or NTSC colour television format to be viewed on a conventional television set (**45**).

Compressed audio data from controller (**52**) is passed, as required, to audio processor (**68**) (available from Texas Instruments) which decompresses the retrieved audio data. Program memory module (**70**) (also available from Texas Instruments) stores the operations program of audio processor (**68**) to perform the decompression process. Data memory module (**72**) (also available from Texas Instruments) temporarily stores the audio data from controller (**52**) if required.

The digital-to-analog (D/A) converters (**74**) translate the digital decompressed audio data to analog and programmable filters (**76**) smooths out any D/A conversion anomalies that can distort the final output. Full stereo output is available as illustrated. While a conventional television (**45**) that requires NTSC video format for viewing is illustrated, it should be noted that the video processor will also support future digital television video formats.

3. Operation

In operation, a customer requests the delivery of a desired movie by phoning the central distribution centre or regional distribution centre (**12**) and identifying the movie with an identification code unique to the movie. Membership and credit card validation is then requested and if authorized, movie distribution is initiated. At the start of transmission, the customer's UIN is appended to the video being distributed. This UIN is embedded in the customer video storage system (at the customer's location) ensuring a one-to-one match between the customer and the requested movie. The customer's requests are either conveyed verbally over the phone system to a CDL operator or through an automated communication system using a touchtone key pad on a telephone handset (not illustrated).

It is a preferred aspect of the present invention that the customer's storage device allows only one replay, where upon the stored data is either erased or locked from further replay.

Thus it is apparent that there has been provided in accordance with the invention a method and apparatus for distribution of movies to a customer's home and the like that fully satisfies the objects, aims and advantages set forth above. While the invention has been described in conjunction with a specific embodiment thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended to embrace all such alternatives, modifications and variations as fall within the spirit and broad scope of the invention.

What we claim as our invention:

1. A method for distribution of movies for viewing on a customer's television set, the method comprising the steps of:

(a) compressing and digitizing audio visual data corresponding to an entire movie and storing the compressed, digitized data at a remote source;

(b) sending digitized compressed signals containing audio visual data corresponding to the entire movie selected by the customer from a source to a receiver of the customer;

(c) passing the signals to a converter to convert the signals to corresponding electronic signals;

(d) passing the electronic signals to processors where they are decompressed and converted to signals compatible with conventional television sets; and

(e) passing these converted signals to a conventional television set for viewing by the customer.

2. A method according to claim 1 wherein the signals from the converter are temporarily stored in memory means for retrieval and passage to the signal processors for decompression and single viewing on the television set at a time selected by the customer.

3. A method according to claim 2 requiring the preliminary step of the customer providing a satisfactory identification electronically to the source and being cleared by the source before the digitized compressed signal is sent to the customer's receiver by the source.

4. A method according to claim 2 wherein a library of movies in digitized compressed form is maintained at the source, individual movies thereof to be selected by a customer for viewing.

5. A method according to claim 4 further comprising the preliminary step of digitizing and compressing audio visual data making up the films for storage at the source.

6. A method according to claim 1 wherein the digitized compressed signals are sent from the source in optical signal format.

7. A method according to claim 1 wherein the digitized compressed signals are sent from the source via coaxial cable.

8. An apparatus for enabling a customer to electronically receive and play on a television set a pre-determined movie, the apparatus comprising:

(a) receiver means to receive from a remote source data in digitized compressed signal format containing audio visual data corresponding to the movie;

(b) a converter to be electronically associated with the receiver means to convert the signal data to corresponding electronic signal data;

(c) a video processor to be electronically associated with the converter to receive the electronic video signals, decompress them and convert them to electronic video signals compatible with the television set to provide a video image of the movie on the television set; and

(d) an audio processor to be electronically associated with the converter to receive the audio electronic signals from the converter, decompress them and convert them to electronic audio signals compatible with the television set, the video processor and audio processor to be electronically associated with the television set to provide an audible sound tract of the movie through the television set.

9. Apparatus according to claim 8 further comprising a television set electronically associated with the video processor and audio processor to receive signals therefrom.

10. Apparatus according to claim 8 further comprising memory means to be electronically associated with the converter and with the video processor and audio processor, to store and retrieve electronic signals from the converter until desired by the customer for viewing the movie on the television set.

11. Apparatus according to claim 10 wherein the signals from the converter are placed on a compact disc and wherein the memory means comprises a compact disc erasable read only memory (CD-EROM) controller to store and retrieve the electronic signals from the compact disc.

12. Apparatus according to claim 10 wherein the video processor comprises a pixel processor provided with a decompression algorithm to convert the compressed electronic video signals to conventional decompressed video signals and a video random access memory (VRAM) to be electronically associated with the pixel processor for storing data and providing output data at a high rate compatible with the television set.

13. Apparatus for electronically distributing movies to a customer's television set in conjunction with the apparatus of claim 8, comprising a video library of movies stored in digitized compressed audio visual format and computer means electronically associated with said library to provide customer electronic access to individual movies in that library and to send to said receiver means in digital signal form the digitized compressed audio visual data for a selected movie in that library.

14. Apparatus according to claim 13 further comprising electronic customer access means electronically associated with said computer means to control and document customer access to the library.

15. Apparatus according to claim 8 wherein the receiver means is adapted to receive data from the source in optical signal format and the converter is an optical converter.

16. Apparatus according to claim 8 wherein the receiver means is adapted to receive data from the source from a coaxial cable.

* * * * *

EXHIBIT O

PATENT
Attorney Docket No. 2473.0001-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)		
Paul YURT et al.	)		
Serial No.: 08/133,982	)	Group Art Unit:	~~2603~~ 2616
Filed: October 8, 1993	)	Examiner:	A. Le
For: AUDIO AND VIDEO TRANSMISSION AND RECEIVING SYSTEM	)		

Assistant Commissioner for Patents
Washington, D.C. 20231

AMENDMENT

Sir:

This is a response to the Office Action mailed on December 30, 1994, the period for response to which is extended through May 30, 1995, by the attached petition for a two-month extension of time along with the appropriate fee.

Please amend the application as follows:

IN THE CLAIMS:

33. (Amended) A transmission system for providing information to be transmitted to remote locations, the transmission system comprising:

a plurality of library means for storing items containing information;

identification encoding means for retrieving the information in the items from the plurality of library means and

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for assigning a unique identification code to the retrieved information;

conversion means, coupled to the identification encoding means, for placing the retrieved information into a predetermined format as formatted data; and

transmitter means, coupled to the conversion means, for [coordinated] transmission of the formatted data to one of the remote locations.

D1

48. (Amended) A digital audio/video communication network comprising:

a local reception system comprising[;]:

means for receiving compressed, digitized data representing at least one item of audio/video information at a non-real time rate,

means for storing a complete copy of the received compressed, digitized data, and

means, responsive to the stored compressed, digitized data, for transmitting a representation of the at least one item of audio/video information at a real-time rate to at least one of a plurality of subscriber receiving stations coupled to the local reception system; and

a converter at the at least one of the subscriber receiving stations for receiving and decompressing the compressed, digitized data representing the at least one item of audio/video [program] information.

D2

D3

50. (Amended) A digital audio/video communication network as recited in claim 48, further comprising a processing station for formatting items of audio/video information as compressed, digitized data and transmitting the compressed, digitized data representing at least one item of audio/video information at the non-real time rate to the [local distribution system] means for receiving.

D4

53. (Amended) A method as recited in claim 52, further comprising the step of decompressing the compressed, digitized data representing the at least one item of audio/video [program] information after the transmission step.

REMARKS

In the Office Action, the Examiner rejected claims 33, 34, 48-54, and 58 under 35 U.S.C. § 102(e) as being anticipated by Ballantyne et al. (U.S. Patent No. 5,133,079); rejected claims 33, 34, 39, 43, and 48-57 under 35 U.S.C. § 112, first paragraph; and rejected claims 48-51, 53, and 54 under 35 U.S.C. § 112, second paragraph. The Examiner allowed claims 35-38, 40-42, and 44-47 and indicated that claims 39, 43, 55-57, and 59-61 were directed to allowable subject matter.

By this amendment, Applicants have amended claims 33, 48, 50, and 53. Applicants respectfully submit that claims 33-61 are all now in condition for allowance.

In response to the Examiner's rejections under 35 U.S.C. § 112, second paragraph, Applicants have amended claims 48, 50,

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and 53. The amendments fully respond to the Examiner's rejections under 35 U.S.C. § 112, second paragraph.

In response to the Examiner's rejection under 35 U.S.C. § 112, first paragraph, Applicants have amended claim 33.

In response to the Examiner's rejection of claim 39 under 35 U.S.C. § 112, first paragraph, applicants note the specification on page 12, lines 3-13. The indicated paragraph discloses copy protection to prevent recording a digital audio and/or video signal stream. As disclosed in the specification as filed, a protected item will not be passed to the compressed data port of a digital recorder for off line storage. Thus, Applicants respectfully submit that the specification does disclose protected data recognizing means and disabling means. The means recognize a protected item, and do not pass the protected item to a digital recorder for offline storage. Thus, claim 39 is fully supported by the specification as filed.

In response to the Examiner's rejection of claims 48 and 52 under 35 U.S.C. § 112, first paragraph, Applicants note that the specification, as filed, discloses transmitting compressed digital information throughout the specification. Applicants respectfully submit that one of ordinary skill in the art understands that transmitted compressed information is not transmitted at a real time rate. Rather, compressed data is transmitted at a rate faster than the real time rate. Thus, claims 48 and 52 are fully supported by the specification as filed.

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The Examiner's rejection of claims 33 and 34 under 35 U.S.C. § 102 as being anticipated by Ballantyne et al. is respectfully traversed.

Ballantyne et al. disclose a method and apparatus for the distribution of movies. As disclosed in column 1, lines 9-12, movies may be selected from a central library and electronically supplied to a customer's home for subsequent viewing at a time determined by the customer. As disclosed in column 2, lines 10-13, movies are distributed to a customer's home from a central or regional library.

Thus, Ballantyne et al. disclose that movies may be distributed from either a central library or a regional library. Ballantyne et al. do not disclose or recognize that movies may be distributed to a single user from both a central library and a regional library. Rather, in the system of Ballantyne at al. a user only receives movies from a single library.

Ballantyne et al., thus, fail to disclose the claimed identification encoding means for retrieving information in items from a plurality of library means and transmitter means for transmission of formatted data from a plurality of libraries to one of a plurality of remote locations.

Ballantyne et al. further fail to even remotely suggest collecting information from a plurality of geographically separated libraries for transmission to a single remote location as recited in claim 34.

Thus, for at least the reasons above, claims 33 and 34 are fully patentable over the disclosure of Ballantyne et al.

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The Examiner's rejection of claims 48-54 and 58 under 35 U.S.C. § 102(e) in view of Ballantyne et al. is respectfully traversed.

Claims 48-54 and 58 recite various parts of a system in which information is sent from a transmission system to a reception system and then to individual users. Such systems are shown, for example, in Figs. 1d, 1e, and 1f of the specification.

Applicants respectfully submit that Ballantyne et al. do not disclose each element of the various combinations recited in claims 48-54 and 58. Rather, Ballantyne et al. disclose a system wherein a single library sends data, through either optical cable or a coaxial cable, directly to a user location. Ballantyne et al. fail to disclose an intervening reception system which, for example, decompresses compressed data and sends the decompressed data to the individual users. Ballantyne et al. fail to disclose, teach, or suggest the combinations recited within claims 48-54 and 58.

Thus, for at least the reasons above, claims 48-54 and 58 are fully patentable over the disclosure of Ballantyne et al.

In view of the above remarks and amendments, Applicants respectfully submit that claims 33-61 are in condition for allowance. Reconsideration of the application and the allowance of all of the pending claims are respectfully requested.

If there are any fees due in connection with the filing of this amendment, please charge the fees to our Deposit Account No. 06-0916. If an extension of time under 37 C.F.R. 1.136 not

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accounted for above is required for the entry of this amendment, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER

By: [signature]
Michael R. Kelly
Registration No. 33,921

Dated: May 30, 1995

MRK/daf

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